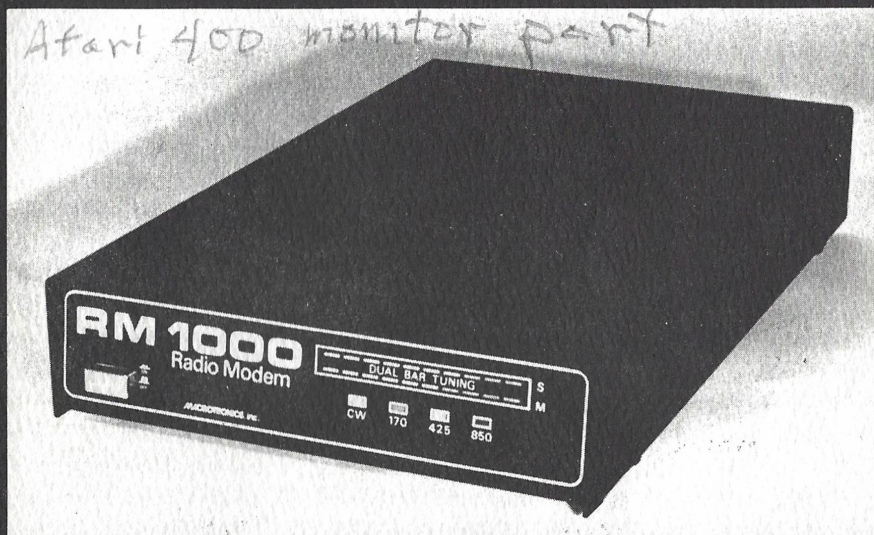


AD ASTRA...



MAJOR ARTICLE INSIDE!

Add direct video to your 400!!

THE JOURNAL OF
THE ATARI MICROCOMPUTER NET
AMATEUR RADIO OPERATOR USERS' GROUP

AD ASTRA...

THE JOURNAL OF THE ATARI MICROCOMPUTER NETWORK

THE ATARI MICROCOMPUTER NET USERS' GROUP

NET COORDINATOR,

Jack McKirgan II, WD8BNG

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Washington C.H., Ohio 43160

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NOVEMBER-DECEMBER 1983

AD ASTRA... VOL. 2, # 4

The ATARI Microcomputer Net is a non-profit organization of amateur radio operators, short-wave listeners and ATARI Computer Enthusiasts who share a common interest- exchanging information on applications, programming and operation of the ATARI Microcomputer System. With these goals in mind, all persons are invited to join the net for the purpose of personal enlightenment and fraternalism. Amateur radio operators and short-wave listeners are especially encouraged to directly participate in the weekly on-the-air meetings.

"Ad Astra..." is the official journal of the ATARI Microcomputer Network and is made available to all registered members of the Net. "Ad Astra..." is an optional entity of the Net and there is no obligation to receive the journal. Members who wish to receive "Ad Astra..." are asked to help offset the cost of printing and postage by sending an annual donation of \$10.00 to Net headquarters at the address shown at the top of this page.

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EDITORIAL

Well, guys and gals, here we are again! I hope that this issue of "Ad Astra..." makes it to you in timely fashion. I realize that many of you have been impatient (witness the mounds of letters that I receive if I'm late with the journal!), BUT please remember that this is strictly a volunteer effort and my time must be put toward all of my endeavors in a manner that allows the proper allocation to hobbies, family and business. It would be great to be able to devote all of my time to this journal, but barring lay-off or some other disaster, I will continue putting only free time into the journal. 'Nuf said?

Remember all of the moaning and groaning that many people made when it was discovered that the ATARI 1200XL would not run all the programs designed around the original system? At that time I was enthusiastic about the potential of the system and in the months to follow I was chastized in other user group newsletters for being even slightly positive about the computer. I remain unchanged in my views about the 1200XL and ATARI has come through again! Oh, ye of little faith! Naturally, as with ALL new computers, there were some definite bugs in the system. ATARI has done their best to come up with a solution for the video problems. We are including information on these mods in this issue. They really work well too! Beyond that was the problem of incompatibility in operating systems. Well, ATARI has come up with the answer to that one too!

Stace, KE0F, wrote in his evaluation of the 1200XL that it should be possible to load the original 800's operating system (OS) into the 1200XL to make it fully compatible. I was raked over the coals at a Columbus (Ohio) ACE meeting by a couple of so-called "experts" who claimed that it was impossible to switch out one OS for another. Not being a machine-language programmer or a hardware expert, I was not able to tell exactly how it was done, even though I had been assured by a programmer at ATARI that they would make the original OS available ASAP. I take much satisfaction from ATARI's obvious regard for their customers and users! At this time I am happy to announce that ATARI has released a disk known as "The Translator" for those customers who purchased the 1200XL! Using "The Translator" is very easy... simply boot-up and hit the "SELECT" key to force a "cold start". (The 1200XL will then act like a 400/800 when it is powered-up.) This means that you can use any machine language program that used to violate the XL OS! There are 2 versions of "The Translator" available (apparently allowing your 1200XL to emulate the "A" ROM or the "B" ROM (Which also had some incompatibility problems at first for the same reasons!))

Now, what does all of this mean? Well, this is significant for a number of

reasons... First, when the Apple IIe was released there was no major grumbling from the masses because of software incompatibilities (they claimed 75% compatibility 'tho it was closer to 70%... about the same as the 1200XL). When the TRS-80 Model III replaced the Model I, there was almost 0% compatibility in machine language programs that accessed the printer's portion of the I/O! (A disaster for business users who were changing to the newer systems and only had the Model I software!). Yet, there was no cry of foul! My Commodore PET 2001 had four (count 'em 4!) different OS sets available for it and the incompatibilities were so varied among them that it was impossible to keep everything straight. (I did some personal screaming but it went unnoticed.). BUT, when ATARI introduced the 1200XL, AND when much of the software did not run (even though the original OS was documented as having a reserved area for expansion)... then the self-righteous and indignant "experts" surfaced. Unfortunately, not all of the "experts" had their opinions published in user group newsletter... some of them went to national magazines and freely hand out phrases like "1200 debacle" and "orphan OS". ATARI's "orphan" suddenly became a clan! Thank you ATARI, for your support and concern for your users!

Secondly, and perhaps of greater interest for the users' immediate needs than even thinking about factory support, now the 1200XL is the MOST POWERFUL ATARI COMPUTER RELEASED TO DATE!!! Granted, because of the initial put-downs, some of the third party enhancements were not produced for the 1200XL. But, when it comes to program support you can now have three different OSs available at your fingertips! Effectively, this means that your basic system can, when compared to the competition, operate at first, second and third generation levels that are impossible on the others! Don't forget that all of the new software is being produced with the XL OS in mind, so things are looking better all the time! If a person wanted an 800XL system without the need for the expansion bus, it is possible that the folks who purchased the 1200XL will have a better bargain! At the time of this writing, 1200XLs are being purchased for \$189 after rebate and this means that the nearest competition will cost about \$30 more! It may be too late to consider the addition of a 1200XL by the time this reaches you, but I am certainly considering it, especially in the light that the Macrotrons RM-1000 and terminal software is compatible without the need for the old OS! What a sleek unit to have in front of the operating desk!

The next thing I want to speak about is ATARI's announcement on November 9, 1983 that they would no longer participate in the "kamikaze-like policy of selling systems at such a low price that profits cannot be made". I know that there are many people who hate to see the end of low-priced computers but let's look at it from both a business and personal level... Just two years ago ATARI 800s sold for around \$750 with 16K RAM. TRS-80 Model IIIs with 16K went for \$1000 and Apple IIs went for \$1300 (ATARI's list price

was \$1080 but it was not sold under "controlled conditions"). All was well with the world, ATARI had the greatest market share of these major systems and all three companies were making money as were their dealers. Enter the Commodore 64 with all of it's hype, advertising designed to intimidate parents, cheap construction, cheaper and less sophisticated OS, and additional advertising that the gullible public took to mean that it was superior to the best that NASA had to offer! Without shame, Commodore stole many (but certainly not all) of ATARI's super features and crammed them into a woefully inadequate OS with a language that didn't even support the features of the OS! Yet, people started gobbling them up creating a vacuum in the mid-market. The joke that is the VIC-20 started making things tougher on the low-end as well. Manufacturers are responsible to their stockholders who want to know why products aren't selling as well as they were. So, TI decided to reduce the price of the 99/4A and the rest followed suit. This trend continued past the point of profit-making and other marketing measures, none too successful, were tried. It's now history... TI no longer is in this market and it won't be long before what factory and third party support there was for that machine will dry up. Other major manufacturers, including ATARI, are hurting for profits because of this insanity. It is time for some reason to return to the marketplace... and I am proud that ATARI is the leader in this endeavor. It took a lot of "guts" to stand up and say "we have a quality product and there is no reason for us to sell it in the same market as inferior competition.". This is a bold move and one that I feel will prove to be the right one. Beginning January 1st, 600XL and 800XL computers will increase in list price by about \$40 and it is expected that the 1400XL and 1450XLD will see a similar percentage increase in price. See the next paragraph for an indication that "you get what you pay for":

In a recent article entitled "MANY UNHAPPY RETURNS", it was revealed that all of Commodore's sales are costing them a fortune! No, their cheap little VIC-20s and 64s don't cost much to make, but what happens if you have to make them twice? Although Commodore has slowed down it's production considerably, they seem to have absolutely zero quality control! Returns of VICs and 64s are now at the 67% level during warranty periods! VIC-1541 disk drives are being returned at an 82% level!!! (This assumes that you can locate one since they are now non-existent on the market). In a recent issue of ANTIC Magazine, ATARI's quality control efforts are documented and it is very reassuring to know that the company has not relaxed it's standards in an effort to go for the quick buck!

One last thought... these are very difficult times for many ATARI owners because of the obvious changes in the market. I predict that the media hype that we are experiencing right now about 1983 having the "Christmas of the Computer", will fall flat on it's face! Certainly there are a lot of

systems being sold, especially the discontinued TI-99/4As at \$45, but most of these will end up in the closet after three weeks. It is the long-term user, the hobbist and business user, that will provide the continuing and slowly expanding market that the companies need. In January, many companies will get their sales reports and find that they have a lot of unsold computers on the shelves and in warehouses that they have priced at a point that makes it impossible to make a profit. The expected secondary sales of software will not happen (except for ATARI, most 1st party software stinks!). One of ATARI's smartest moves may have been the decision to keep the new systems off the market until the price increases go into effect and the market stabilizes! Now, if they would just come up be some decent advertising... no hype, just an explanation of what the ATARI computers can do, with maybe some emphasis on the things that ATARI does better than any of the others! DE Jack, WD8BNG

ATARI MICROCOMPUTER NETWORK NET ORGANIZATION

Regional calling frequency: 7.235 Mhz (Call station or CQ ATARI)

National Net: 14.325 Mhz. at 1600Z, Sundays,
NC/WD8BNG

Midwest Regional Net: 7.235 Mhz. at 1830Z, Sundays,
NC/WD8BNG

Southeast Regional Net: 7.235 Mhz. at 1800Z, Sundays,
NC/KD4DB

Southwest Regional Net: 7.230 Mhz. at 1800Z, Sundays,
NC/KC5FW

Pacific NW Regional Net: 7.230 Mhz. at 1800Z, Sundays,
NC/KC7DG

East Coast Regional Net: 3.960 Mhz. at 8 pm EST,
Wednesdays, NC/KA1TB

West Coast Regional Net: 7.235 Mhz. at 11 am PST,
Sundays, NC/WA6TUB

International Net: 21.400 Mhz. at 2330Z,
Alternate Thursdays, NC/WD8BNG

Dayton, Ohio Local Net: Open channel daily on 146.445
Mhz., Simplex

Chicago, IL Local Net: Open channel daily on 147.570
Mhz., Simplex

Central Kentucky Local Net: 145.85 (TX 600Khz down)
repeater, 8 pm EST, Wednesdays, NC/WD4HPL

Additional nets will be formed as regional/local net control stations volunteer their time. If you would like to start a regional/local net in your area, contact WD8BNG for a Net Coordinator's packet.

THE ATARI 1027 PRINTER

December 26, 1983

Dear Members,

I am writing this review of the ATARI 1027 Letter Quality Printer with the aid of that machine. My first impressions are as follows:

The printer certainly is lightweight as far as printers go and at first I thought that it might be due to a cheap mechanism or the like. Indeed, after looking over the components used in the apparatus, I am convinced that it is as finely built as my NEC-8023A-C with the exception of the PC board material which is phenolic rather than glass fiber. The reason for my immediate impression that it may not be strongly built is that it is relatively lightweight and this is due to the power supply being located outboard of the printer proper. This can hold the advantage of keeping the innards of the printer relatively cool and also lessening danger of disaster to mechanical parts if a power supply should ever fry.

The print drum seems to be well designed and it even supports the special characters that are present as an alternate character set on the XL series of computers. These characters will be printed at the end of this article. The first time the printer took off, I was flabbergasted by the constant spinning of the bar that controls the print drum. I thought the thing was going to take off! The jive dance of the drum really floored me and I thought something was broken until I realized that it was accessing different characters on the five divisions of the drum. After all, I was used to a dot-matrix printer that chose it's pattern as it printed! Another pleasant suprise is that there is no hassle when it comes to changing ribbons... because there are no ribbons! Inking is accomplished by means of an ink roller and you merely have to push the new one onto a spindle... about three seconds worth of effort!

SUPPORT

I understand that the ATARI WRITER program has a printer driver available on disk for the 1027. I am using LETTER PERFECT to write this article and thus far it seems to be working well with the default values for the NEC-8023A-C printer! Certainly there are features that can't be accessed such as double-wide characters or font changes. The font on the print drum is prestige-elite and as you can see, it does a fine job of it! This is the font that most businesses use for correspondence anyway. I have not used the printer with TEXT WIZARD but I would guess that it would work fine with little problem. Additionally, the public domain word processor, SCRIPTOR also seems to work quite well it the 1027.

There is not much of a buffer with the 1027, which seems like a handicap at first especially when you consider that it operates at "letter quality speeds" (20 cps), BUT because of the fact that the machine is designed to work with letterhead paper, you have a chance to pause the printout if you are ready to change paper. Underlining is also supported by the printer by use of control codes in BASIC or under word processor special codes.

In all, I really appreciate the SUPER job that ATARI did on the 1027 printer and I have been looking around for a comparable machine at such a good price (\$298 locally), but there isn't any comparison! Sure there are daisy-wheel printers that are more versatile, but at twice the price! I believe that the 1027 would make a fantastic primary printer for persons who do limited amounts of printing on letterhead stationary or who wish to compose very good looking drafts for publishers. Certainly, I would not consider the 1027 for printing 2000 mailing labels or 100 page documents for distribution to local club members. In short.... I like it!

DE Jack, WDESNG

This is a test of the underlining feature on the ATARI 1027 printer. Underlining is accomplished in LETTER PERFECT by typing CTRL-V followed by the number 15 in parentheses. Halting underlining is accomplished by using CTRL-V followed by the number 14 in parentheses. This will be a different procedure on other word processors. Of course, the printer driver can be customized in order to use the default codes.

CUSTOM CHARACTERS!

The following characters can be accessed by using the appropriate control characters or their equivalent character codes:

á û Ñ É ç ò ì Ì ï ù ä Ö ö ö Û ä ü ï é ç ñ ë ä Å ¶ ↔
 Å | î á



**CHARLIE, W5GA
 IN HIS SHACK!**

**THE SEIKOSHA
FROM AXIOM
By Valerie Hogan
WD6FFR**

I needed an inexpensive Printer for the ATARI 800 that would not require an '850 interface, thus saving about \$150. The Printer, with a word Processor Program, would expand the undertakings of my computer so that I may discard my ancient typewriter. I discovered an inexpensive, easy to use Printer... the Seikosha AT-100, made for Axiom (with a Price less than \$300).

The Printer is a little slow, 30 cps, and Prints certain lower case letters' decenders ("tails") as capitals or above the Print-line. Still, the other features outweigh these minor details. The Printer has full Graphics capability, double-width character output, repetition of data up to 256 times, Paper width adjustable up to 10 inches, uses standard fan-fold Paper, Prints 80 characters Per line, has a 2-year warranty and best of all, Plugs directly into the ATARI computer system via the complex serial Port. Axiom even includes a HI-RES screen dump Program with the Printers' instructions. Also, word-Processing may be accomplished with the ATARI Writer and other word Processing Programs.

Again, if you need an inexpensive Printer for your system and have a limited budget, this could be your answer. It is easy to use and yet has all the technical data for the sophisticated user.

73, DE Valerie, WD6FFR

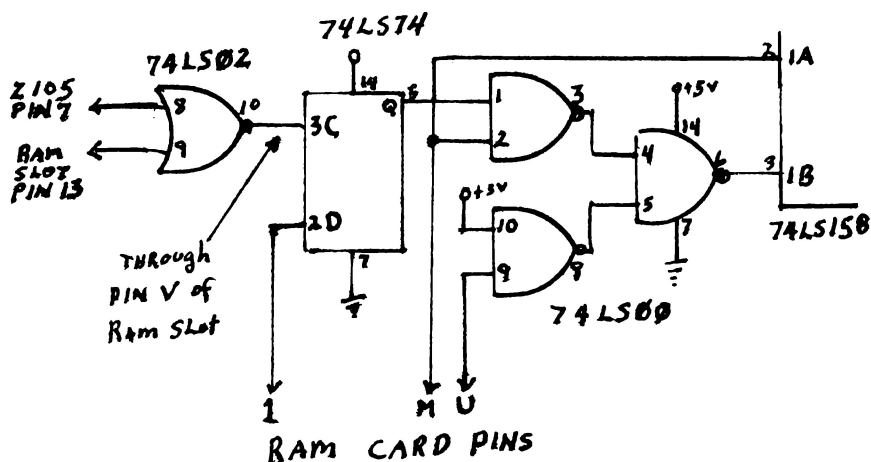
Editor's note: In an effort to edit Valerie's article in "Ad Astra..."s format, it was necessary to use an AT-100 locally to print the article in the same manner as the original so a feel of the character set could be made. Un-

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fortunately, the ribbon of the unit in use was re-inked with an overdose of fluid and smearing was the result. This is not the case with correctly-inked ribbons.

ADDITIONS TO THE 48/64K ATARI 400 MODIFICATIONS

In two issues of 'Ad Astra...', we printed the 'MACE MOD' by Clause Bucholtz for adding 48/64K memory to the ATARI 400. There were no problems encountered with the article as printed, but when completing the mod for 64K led to the discovery that there were some labels missing on a couple of critical IC-pins. We are including a revised drawing of the address IC for 64K and the needed labels have been added. We are sorry for any inconvenience caused by this omission.



REVIEW of the
MACROTRONICS SCREEN DUMP
PROGRAM

by Jim Blain

When Jack gave this program to me for review, I was a little apprehensive since it included a piece of hardware to make the program work. I was a little sceptical at first because of the problems that I had with the original version of FILEMANAGER 800... it also required a plug-in module to make the thing work and I broke mine the first week that I had it which left me in left field until I got a replacement. Having worked with the Macrotronics printer interface for screen dump for a short period, I am convinced that because of the location of the cable, there is little chance of stepping on it or losing it.

This package is indeed a hardware/software combination. The hardware is simply a couple of DB-9 connectors in a special housing that contains a simple circuit that will re-invert the printer information that will be sent through it. The cable-head plugs into ports 3 and 4 of your ATARI computer and the cable folds under your computer and terminates in a DB-15 connector that your standard printer cable will plug into. Then the magic begins!

Boot up the MACROTRONICS SCREEN DUMP program. You are greeted by a screen that asks you to identify the type of printer you are using. Simply pick a number that corresponds to your printer. Then BASIC (or whatever) takes over. I am VERY impressed by the number and types of printers that are supported by this program! Indeed, almost any presently available common graphics printer is supported! Since my printer is an NEC-8023A-N, I was pleased to find that this and the Prowriter were available on the list. Did I mention that that was all there is to it? Yep! Now, if I want to print anything out that is on the screen, all I have to do is hit CTRL-P at anytime. The program will halt execution and the screen contents will go to the printer. The only thing that does not get printed properly is a custom display list. That would be rather tricky anyway, but it's not too often that you would be printing such a

screen. I just love being able to send hi-res pics to the printer as easy as punching a couple of buttons!

Dumping graphics is not the least of this program's talents... it can also send standard text to the printer using the printer's own fonts. For this reason, you can use this program and interface for word processing, program listing or almost any application where the ATARI 850 Interface would normally access the printer.

There are also some support and applications programs included on the diskette for using this program to it's fullest in a number of situations. The documentation is very complete and should be able to help most people in any situation. There are also a couple of program listings for some nifty utilities, including a hi-res drawing program that really works well!

The program apparently works with the color registers and reproduces different colors as different shades of grey on the printout. Note that I said COLORS, NOT HUES! For this reason, you may see some shades that you didn't expect! Experimenting is the best way to find the most pleasing combinations. I found that the GRAPHICS modes 10 and 11 are supported, but since GRAPHICS 9 is one single color with 16 shades, there will be no shading... only one color will be printed wherever a pixel is turned on.

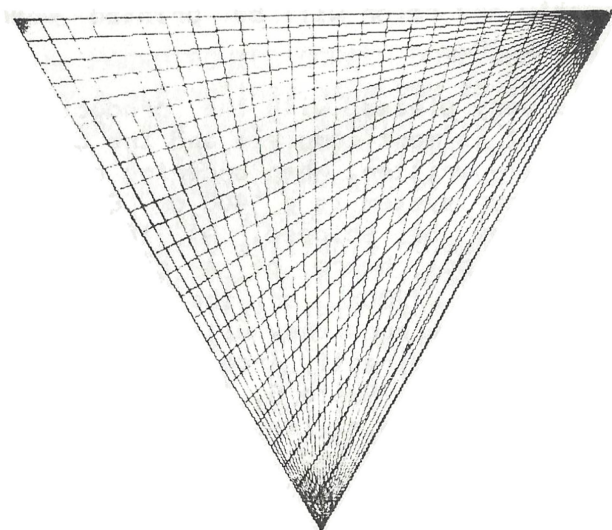
In all, I was very pleased with the product and it's performance. It is most complete and the documentation is professionally written. When ordering one, you must state whether your system is a '400 or '800 so that the proper cable may be shipped. At the time of this writing I have not heard of a cable being made available for the 1200XL or the newly available XL series, although I am sure they will produce one. This package is available directly from MACROTRONICS at 1125 N. Golden State Blvd, Suite G, Turlock, CA 95380. The cost is quite reasonable at less than \$80. They will also take phone orders and C.O.D. the shipment. Nice folks out there too! Jim Blain

Editor's note: When using this program, be sure to set

your printer's default at Pica font. If not, you will get some "squished" pictures! You will see a number of captions for articles in standard and reversed keyboard graphics in this issue of "Ad Astra..." that were done with the MACROTRONICS SCREEN PRINT program. It works in standard as well as redefined characters in the text modes. Try it!

Our thanks to Macrotronics for the review sample of the program. Sorry guys, we returned it so it's not up for grabs! DE Jack, WD8BNG

**FLASH!!! MACROTRONICS
HAS JUST ANNOUNCED THAT
THEY HAVE A NEW VERSION
OF THEIR SCREEN-DUMP
PROGRAM THAT WILL WORK
THROUGH THE PARALLEL
PRINTER INTERFACE AS
WELL AS THEIR OWN UNIT!
ALSO, THE STAR MICRONICS
GEMINI 10 AND 10-X
PRINTERS ARE NOW
SUPPORTED!!!!**



MACROTRONICS RM-1000 TERMINAL UNIT AND SOFTWARE FOR THE ATARI

**by Jack McKirgan II
WD8BNG**

I know that this may sound a little wierd, but if you are serious about RTTY/ASCII and computerized CW, and if you enjoy software engineering at it's finest, and if you demand quality software, then you are CRAZY if you spend hard earned cash for any other presently available system for your ATARI Computer System! I realize that this is an extreme statement, but if you go to the trouble to make some real comparisons, I believe you will agree with me!

The Macrotronics RM-1000 is a state-of-the-art RTTY terminal unit that allows all operation of your rig to be accomplished from the keyboard by means of it's matching interactive software. Multi-stage filters combined with sensitive demodulator circuits allow the RM-1000 to copy extremely weak signals. It is capable of operating in CW mode and RTTY/ASCII mode at 170, 425 and 850 Hz. shifts. Tuning is accomplished via two LED "bar graph" indicators on the front panel. This system is a great improvement on the deflection meter of the RM-1000's precursor, the "TERMINALL". CW mode and RTTY/ASCII shift status are represented by LEDs on the front panel as well. During CW reception the bar graphs act as one long bar indicator making tuning for CW the easiest and most precise that I have ever experienced. On the second day that I used it, I made a 2-way QSO with a Mexican station on the crowded 20 meter band during the peak QRM period of the day. The Mexican station was not presenting a deflection on my S-meter and there was all manner of "chopping" coming in on both sides of our frequency, yet the printout was 100% reliable... and I did not need to have the volume level set at an uncomfortable level. As a matter of fact, the copy could be done independently of volume by plugging the TU into the tape recorder output of the receiver! Considering the differences in impedance in the two sources, the RM-1000 can be considered to be truly versatile!

Except for making two simple cables, there is virtually no interfacing to most rigs for RTTY/ASCII operation! A

shielded wire to the headphone jack, tape recorder jack or in parallel with the speaker will run to the "AUDIO IN" jack on the TU and another shielded cable from the "Phone Patch" jack available on most rigs to a 5-pin DIN connector on the TU is all you need for complete VOX-operated transmit/receive operation! Of course, there are many options available to the user of the RM-1000, including mic-line input and PTT-Keying. A hi and low impedance AFSK output will allow operation in almost any rig under any circumstances. Additional ports are provided for CW Keying, a loop for a hand key, and RS-232C-level connections for I/O with RS-232C devices! (Relay the messages concurrently over a phone modem or to a Votrax synthesizer for "spoken" RTTY text!). Also available are tuning-scope outputs for those who prefer the precision of a scope! All connections are standard, not optional as with some units. The hardware portion of the manual even gives wiring examples for specific rigs! The manual is very complete with a section on theory of operation of the RM-1000 hardware. One surprise to me was that the real-time clock on the screen is not controlled by the computer, but by the TU itself as a 1 Hz pulse sent to the computer through a data line! The connection to the computer is supplied with the software as a ribbon cable with a somewhat proprietary connector to the TU and standard DS-9 female connectors for joyports 1 & 2 (PIA port "A") on the computer. If you are thinking that you might be able to buy the software and use it with an existing commercial or homebrewed TU, you'd better reconsider! As I said before, the hardware and software are interactive and one does not work without the other. I suppose you could break-down the data-looping and multiple command and status lines in order to make it work on your TU, but the effort hardly seems worth it since you could not take advantage of any of the special functions and you would also have to provide the clock signal!

The software is perhaps the hardest thing for me to describe. It is complex, yet elegant in it's execution. It is impossible to describe in detail how each function is implemented... after all, Macrotronics needs 77 pages to do it in a format that is twice the size as this journal! Briefly, the RM-1000 takes all of

it's commands from the computer. This includes PTT, shift and mode selection. Commands available from the keyboard are: Unshift select, ASCII bit count select, Diddle (off, slow or fast), review mode select (editing of text is possible too!), text marking for transferring to printer or drive, printer toggle (both concurrent text may be printed through the PIA with the Macrotronics printer interface or interrupted printing may be done through the ATARI's serial port and '850), CW ID may be implanted, called up immediately, or sent automatically at pre-determined intervals (selectable!). You can also configure the accepted carriage width for printout from 0 to 255 characters! The printer can also be configured to ignore the CR/LF for special printing cases such as RTTY art. The list of special features of the software would take two pages just to document! Of special interest is the fact that files may be uploaded and downloaded to either disk or tape drives. These functions work extremely well and they may be later accessed with a word processor such as "ATARIWRITER" for re-formatting. Likewise, word processor files can be sent to other stations by uploading them!

The message memories (there are 16 of them!) are dynamic in memory allocation. That is, you are not relegated into writing 256 characters into one memory and concatenating it to the next one and so on. If you have 10K of RAM left for messages, you can write (or load) one of them with 18K of data or have as many smaller messages as you need! A "count" message can automatically increment a number every time it is accessed. "What good is that?" you say? How about contesting in which QSOs are numbered!!!!????!! The time can also be sent after each turnover! There is also provision for WRU (Who are you?) operation in which you can set the computer up to respond only to a password, identify the station calling by the password, store or printout the message received and even transmit a message back to the person who accessed your system if you choose! You need not be present to operate the system! This is a personal, mini-mailbox system that is a lot of fun to implement.

I have found no faults with the hardware or software in

over a month of operation. There are a few discrepancies in the documentation, most of which are merely caused by transposing the command sequences, but these can easily be figured out in a few minutes. The manual is quite complete and is in a spiral binder which is welcome for it's handiness while learning about the program. (Pages don't flip over to cover what you are reading!) Also provided is a reference card which lists the commands. Until you become very experienced with a program of this magnitude, you will be using this card often! Knowing that many of us cannot wait to get a new piece of gear into operation, there is even a section of the manual that will allow you to get up and running in as little time as possible. They seem to have thought of everything!

Support is a very important consideration when choosing any piece of gear or software. Five stars must go to Macrotronics in this department! "Bugs" in the original "TERMINALL" software were found and were corrected free of charge to owners of that system in a timely fashion. All of the members who used that system have reported their satisfaction. At this time I have yet to find any bugs in the version for the RM-1000 and I would be suprised to find any. On the hardware front... only two days after the RM-1000 was announced in the first ads, Mario, WA7SKV, called me to tell me that he had ordered one and that his particular rig had a high-voltage keying circuit that could be disasterous to most TUs. He also told me that Macrotronics was making a custom version for him that would work just fine for his circumstances! That's service and support! I have spoken to the president of Macrotronics, Ron Lodewyck, N6EE, and he says that he welcomes all suggestions from members for improvement in the products or perhaps additional products. Remember that your input can be vital! (Remind me to tell all of you about the first time I met Ron... it was the Dayton Hamvention, 1979 and he sold me on this little RTTY interface called an M-80 for my TRS-80.....)

The Macrotronics RM-1000 is available directly from the company:

Macrotronics, Inc.
1125 N. Golden State Blvd.

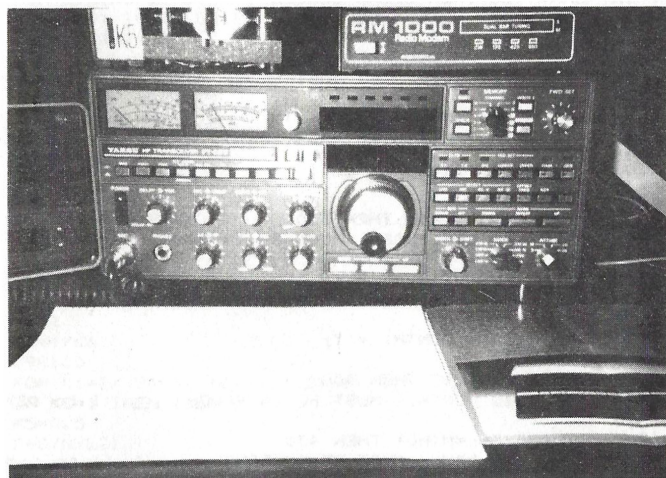
Turlock, California 95380

(209) 667-2888

or

through any of the Amateur Electronic Supply stores (as confirmed by at least two members who ordered them through the Milwaukee store).

As a side note: I have held off buying another TU until now. Macrotronics sent the test unit to me for a three month evaluation period and I had intended to return it at the end of that period. Not this one! They'll get my check instead! I would like to point out that the RM-1000 software is also compatible with the XL series of ATARI computers, making it universally acceptable to users. (Not so with other commercial programs.) The RM-1000 software is available on tape and diskette and shortly after the first of January 1984, it will be made available on ROM card. Price of the RM-1000 is \$239 and the software is \$59.95. DE Jack, WD8BNG



**THE C.A.T.'S MEOW
AT A.R.S. WD8BNG!**

EXPANDED "MINIMUF" PROPAGATION PREDICTION PROGRAM BY GARY LIPPERT, K7UBY

"D:MINIMUF", listed 8/5/83

For the ATARI 400/800/1200

```

1 REM - SAMPLE DRIVER FOR MINIMUF 3.5
10 REM *****
20 REM *
30 REM * MINIMUF 3.5 *
40 REM *
50 REM *****
110 DIM M$(37), A$(4), M(12), S$(8), V$(8), VV$(8), Z$(8), ZZ$(8):
    PI=3.141593
120 FOR X=1 TO 12:READ I:M(X)=I:NEXT X
130 DATA 31,28,31,30,31,30,31,31,30,31,30,31
140 M$="JANFEBMARAPRMAYJUNJULAUAGSEPOCTNOVDEC"
150 R0=PI/180
155 P1=2*PI
160 R1=180/PI
170 P0=1.570796
180 PRINT CHR$(125):REM CLEAR SCREEN
190 PRINT "TRANSMITTER LAT,LON = ";
200 INPUT L1,W1
210 IF L1>=90 AND L1<=90 THEN 240
220 PRINT "INVALID LATITUDE. MUST BE IN RANGE (-90 to +90). "
230 GOTO 190
240 IF W1>=360 AND W1<=360 THEN 270
250 PRINT "INVALID LONGITUDE. MUST BE IN RANGE (-360 to +360). "
260 GOTO 190
270 PRINT "RECEIVER LAT, LON = ";
280 INPUT L2,W2
290 IF L2>=90 AND L2<=90 THEN 320
300 PRINT "INVALID LATITUDE. MUST BE IN RANGE (-90 to +90). "
310 GOTO 270
320 IF W2>=360 AND W2<=360 THEN 350
330 PRINT "INVALID LONGITUDE. MUST BE IN RANGE (-360 to +360). "
340 GOTO 270
350 PRINT "DATE (DAY,MONTH) = ";
360 INPUT D6,M0
370 IF M0>=1 AND M0<=12 THEN 400
380 PRINT "INVALID MONTH. MUST BE IN RANGE (1 to 12). "
390 GOTO 350
400 IF D6>=1 AND D6<=M(M0) THEN 430
410 PRINT "INVALID DAY. MUST BE IN RANGE (1 to ";M(M0);
    " ). "
425 GOTO 350
430 PRINT "SOLAR FLUX = ";
440 INPUT S9
450 IF S9<65 THEN 460
452 A=35+(S9-65)*0.0385
453 DEG
454 S9=INT((S9-65)*(COS(A))/(SIN(A)))
456 RAD :GOTO 480
460 PRINT "INVALID SOLAR FLUX NUMBER. MUST BE GREATER THAN 64. "
470 GOTO 430
480 PRINT CHR$(125):REM CLEAR SCREEN
490 A$=M$(M0*3-2,M0*3)

```



```

500 PRINT "DATE: ";D6;" ";A$
510 PRINT "TRANSMITTER LOCATION:"
530 PRINT " LATITUDE ";L1;" LONGITUDE ";W1
540 PRINT "RECEIVER LOCATION:"
550 PRINT " LATITUDE ";L2;" LONGITUDE ";W2
560 PRINT "SUNSPOT NUMBER = ";S9
570 PRINT
580 PRINT "      HOUR      MUF      HOUR      MUF"
590 PRINT "      (UTC)    (MHZ)      (UTC)    (MHZ)"
600 L1=L1*RO
610 W1=W1*RO
620 L2=L2*RO
630 W2=W2*RO
640 FOR I=0 TO 11
642 FOR J=1 TO 2
644 IF J=1 THEN T5=I
646 IF J=2 THEN T5=I+12
648 GOSUB 1000
650 IF J=1 THEN S$=STR$(T5):GOSUB 900:V$=S$
652 IF J=2 THEN S$=STR$(T5):GOSUB 900:VV$=S$
654 IF J=1 THEN S$=STR$(INT(J9*10+0.5)/10):GOSUB 900:Z$=S$
656 IF J=2 THEN S$=STR$(INT(J9*10+0.5)/10):GOSUB 900:ZZ$=S$
658 NEXT J
660 PRINT "      ";V$;Z$;"      ";VV$;ZZ$
680 NEXT I
690 PRINT
700 PRINT "PRESS RETURN TO PERFORM NEXT CASE.";
710 INPUT A$
720 GOTO 180

900 REM STRING LENGTH
910 FOR XX=1 TO 7-LEN(S$)
920 S$(LEN(S$)+1)=" "
930 NEXT XX
940 RETURN

1000 REM - MINIMUF 3.5
1010 K7=SIN(L1)*SIN(L2)+COS(L1)*COS(L2)*COS(W2-W1)
1020 IF K7>=-1 THEN 1050
1030 K7=-1
1040 GOTO 1070
1050 IF K7<=1 THEN 1070
1060 K7=1
1070 G1=-ATN(K7/SQR(-K7*K7+1))+1.5708
1080 K6=1.59*G1
1090 IF K6>=1 THEN 1110
1100 K6=1
1110 K5=1/K6
1120 J9=100
1130 FOR K1=1/(2*K6) TO 1-1/(2*K6) STEP 0.9999-1/K6
1140 IF K5=1 THEN 1160
1150 K5=0.5
1160 P=SIN(L2)

```

ATARI-NET
BB\$ NUMBER: (512) 494-7476


```

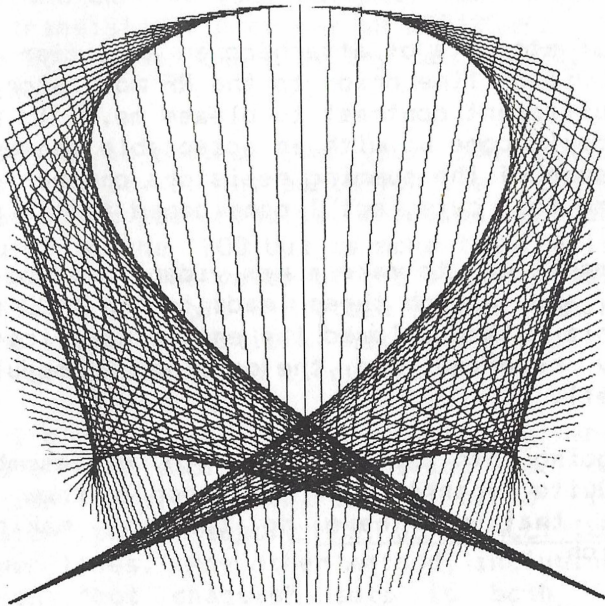
1170 Q=COS(L2)
1180 A=(SIN(L1)-P*COS(G1))/(Q*SIN(G1))
1190 B=G1*K1
1200 C=P*COS(B)+Q*SIN(B)*A
1210 D=(COS(B)-C*P)/(Q*SQR(1-C^2))
1220 IF D>=-1 THEN 1250
1230 D=-1
1240 GOTO 1270
1250 IF D<=1 THEN 1270
1260 D=1
1270 D=-ATN(D/SQR(-D*D+1))+1.5708
1280 W0=W2+SGN(SIN(W1-W2))*D
1290 IF W0>=0 THEN 1310
1300 W0=W0+P1
1310 IF W0<P1 THEN 1330
1320 W0=W0-P1
1330 IF C>=-1 THEN 1360
1340 C=-1
1350 GOTO 1380
1360 IF C<=1 THEN 1380
1370 C=1
1380 L0=P0-(-ATN(C/SQR(-C*C+1))+1.5708)
1390 Y1=0.0172*(10+(M0-1)*30.4+D6)
1400 Y2=0.409*COS(Y1)
1410 K8=3.82*W0+12+0.13*(SIN(Y1)+1.2*SIN(2*Y1))
1420 K8=K8-12*(1+SGN(K8-24))*SGN(ABS(K8-24))
1430 IF COS(L0+Y2)>-.026 THEN 1520
1440 K9=0
1450 G0=0
1460 M9=2.5*G1*K5
1470 IF M9<=P0 THEN 1490
1480 M9=P0
1490 M9=SIN(M9)
1500 M9=1+2.5*M9*SQR(M9)
1510 GOTO 1770
1520 K9=(-0.26+SIN(Y2)*SIN(L0))/(COS(Y2)*COS(L0)+1.0E-03)
1530 K9=12-ATN(K9/SQR(ABS(1-K9*K9)))*7.639437
1540 T=K8-K9/2+12*(1-SGN(K8-K9/2))*SGN(ABS(K8-K9/2))
1550 T4=K8+K9/2-12*(1+SGN(K8+K9/2-24))*SGN(ABS(K8+K9/2-24))
1560 C0=ABS(COS(L0+Y2))
1570 T9=9.7*C0^9.6
1580 IF T9>0.1 THEN 1600
1590 T9=0.1
1600 M9=2.5*G1*K5
1610 IF M9<=P0 THEN 1630
1620 M9=P0
1630 M9=SIN(M9)
1640 M9=1+2.5*M9*SQR(M9)
1650 IF T4<T THEN 1680
1660 IF (T5-T)*(T4-T5)>0 THEN 1690
1670 GOTO 1820
1680 IF (T5-T4)*(T-T5)>0 THEN 1820
1690 T6=T5+12*(1+SGN(T-T5))*SGN(ABS(T-T5))

```

```

1700 G9=PI*(T6-T)/K9
1710 G8=PI*T9/K9
1720 U=(T-T6)/T9
1730 G0=C0*(SIN(G9)+G8*(EXP(U)-COS(G9)))/(1+G8*G8)
1740 G7=C0*(G8*(EXP(-K9/T9)+1))*EXP((K9-24)/2)/(1+G8*G8)
1750 IF G0>=G7 THEN 1770
1760 G0=G7
1770 G2=(1+S9/250)*M9*SQR(6+58*SQR(G0))
1780 G2=G2*(1-0.1*EXP((K9-24)/3))
1790 G2=G2*(1+(1-SGN(L1))*SGN(L2))*0.1)
1800 G2=G2*(1-0.1*(1+SGN(ABS(SIN(L0))-COS(L0))))
1810 GOTO 1880
1820 T6=T5+12*(1+SGN(T4-T5))*SGN(ABS(T4-T5))
1830 G8=PI*T9/K9
1840 U=(T-T6)/2
1850 U1=-K9/T9
1860 G0=C0*(G8*(EXP(U1)+1))*EXP(U)/(1+G8*G8)
1870 GOTO 1770
1880 IF G2>J9 THEN 1900
1890 J9=G2
1900 NEXT K1
1910 RETURN

```



COMPOSITE VIDEO & SOUND FOR THE '400

by Randy T. Agee, WB4BZX

With the last of the '400's selling for prices that rival the pocket calculators of just a few years ago, many of us "hackers" have added one or more to our computer collection. The addition of 48/64K ram boards and real keyboards have created a pseudo '800 with the exception of the video port to drive a high resolution monitor or attach an external audio amplifier.

When ATARI built the '400 they used a slightly different method of summing the luminance, color and sync signals from the '800 (G)CTIA chip that makes it difficult to just go in and tap the video lines. In trying to come up with an acceptable solution I set up a series of test equipment that included a BMC-9191U color monitor, a Panasonic monochrome monitor, a Sencore UA48 video analyzer and a Sencore PS29 video scope. The SALT2 test cartridge was used as a signal reference in the '400.

The initial attempts of attaching an amplifier to the existing video line prior to the RF modulator did not provide sufficient contrast to please me. I realized that I could come up with an acceptable conversion by changing some of the summing resistors on the '400 and making some foil cuts, but I considered that a no-no.

The end result was to make a new video-sound board for the '400 and attach these leads to the '400's mother board. This method allowed the entire modification to be easily reversed and the original RF modulator to work as well.

I am not going into detail on how to disassemble the '400. Quite frankly, if you don't know how to accomplish that you have no business making the modification.

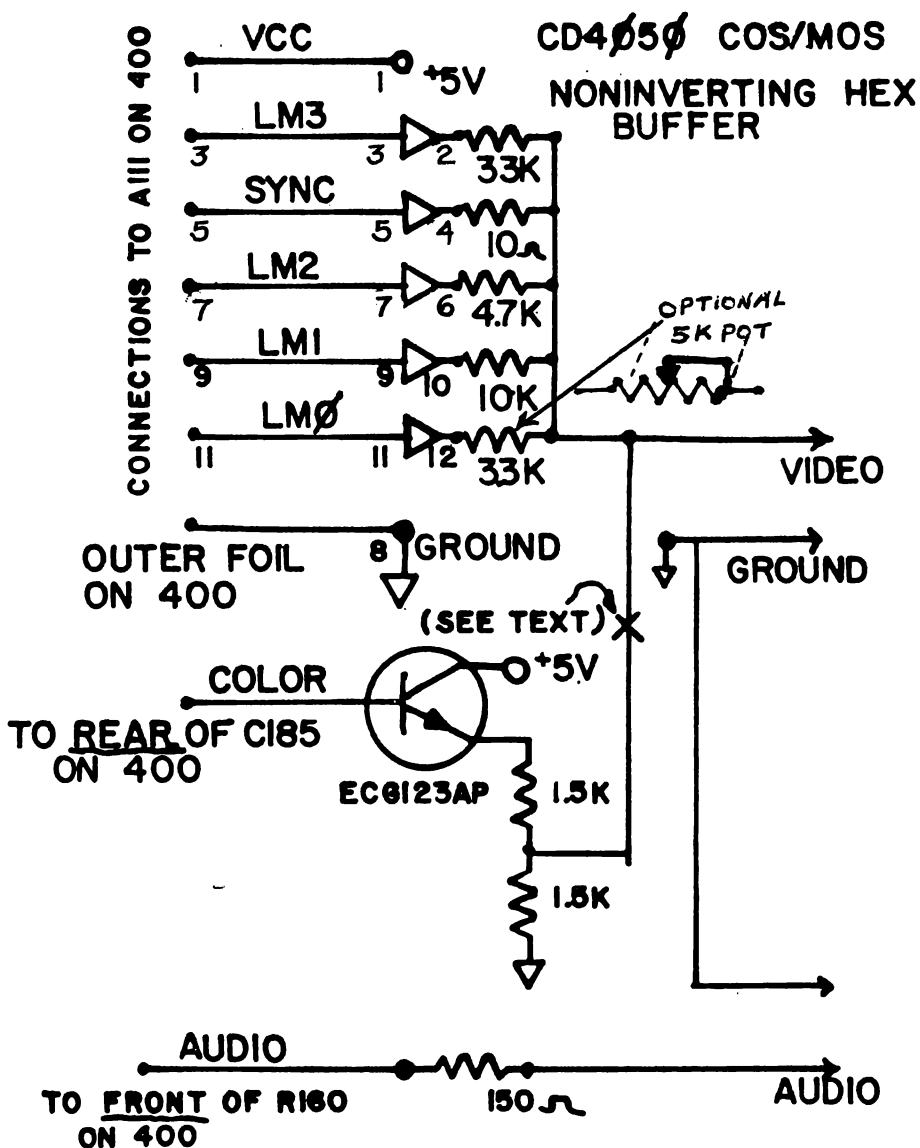
The accompanying schematic should be sufficient for those into hardware modification to complete the change. I constructed the new video board on a section

of Radio Shack 276-159 Experimenter's Dual IC Board and used some nine conductor ribbon cable, run under the lip of the shield, to attach to the bottom of the '400's mother board. The new video board was mounted on the left rear ledge of the '400's case using the existing slots for mounting screws. Rather than mounting a DIN socket as on the '800 I chose to mount three RCA phono jacks on the rear of the '400. One each for sound, video and color. You will note on the schematic an "X" going from the color line to the video line. I keep these separate and make attachment with a "Y" type RCA adapter external to the '400 for a color monitor. If you are using a monochrome monitor you do not want the color information as it will cause ringing in the letters! The schematic references C185, A111 and R160. These are all clearly marked on the mother board and can be found by just looking around. Where I make reference to front and rear, the joystick connectors are the front. The CD4050 buffer was just recently dropped from Radio Shack's experimenter IC line, but you may still be able to find one on the store racks. If not, try any Jim Pack dealer, JDR or someone who carries ECG, GE, etc. semiconductors. The color transistor I used was an ECG123AP. If you don't have an ECG dealer close by try a 2N2222, it should work fine.

Since I have no control over your construction methods or the quality of the parts you use I can make you no promises as to your results. The final product is not as "pure" as the '800 but is more than satisfactory in my estimation. The value of the summing resistors used will provide a 1 volt P-P video signal required by most monitors and the additional hex buffer will not alter your original modulated circuits.

Before I close I want to make one final warning. If you are contemplating modifying a conventional television receiver for direct video input, the television power supply MUST BE TOTALLY ISOLATED from the power lines. Any other method, including polarized cords on "hot chassis" sets is both foolish and dangerous. I sincerely hope that if you don't value your life enough to avoid such a set up that you will value your ATARI enough not to try it!

SCHEMATIC OF NEW VIDEO~SOUND BOARD FOR ATARI 400



ALL RESISTORS ARE 1/4 WATT
5% CARBON

MOON TRACKING
by Zvonimir Makovec, YU3ZM
Box 1
YU-69240 Ljutomer, Yugoslavia

Here is a program which will be useful to amateurs working EME (Earth-Moon-Earth or "Moonbounce"). It is a program used for computing the moon's coordinates (declination and azimuth).

Although it is relatively simple program, be especially careful when entering the decimal figures in the formulas. A sample printout from New York is included in order to have a standard to compare your results.

The program only needs the input data of start time (in UTC), location on Earth's surface (i.e. geographical coordinates of your QTH), and a time step in which the computations will be displayed. The output data is valid for a resolution of ± 1 degree. The program is universal for all dates and time in past and future from all locations (be careful with UTC and longitudes east of Greenwich!). This program is a modified version of one written by Helmut Strasser in the December '83 issue of "MC" (I have also added a routine for providing hard-copy printout, Jack WD8BNG).

Have fun with this program and I hope that this will provide the basis for many hours of enjoyment and experimentation. For non-radio members, you can have fun with this program by using it with telescope setting-circles or even a simple protractor and level to check the azimuth! De Maki, YU3ZM

EDITOR'S COMMENTS

Two issues back, Maki placed an ad in our journal expressing his desire to receive old issues of magazines. It is very difficult to obtain western computer magazines in Yugoslavia and I am sure that he would appreciate your assistance. At this time he has not received a single copy and I would like to ask each of you to consider what his contributions to the net and the journal have been. Think about the situation you would be in without "ANTIC", "A.N.A.L.O.G.", "HI-RES" or "COMPUTE!!". The purpose of our network is to SHARE... how about returning Maki's generosity by sending some old issues of your magazines to him? (Even tear-offs from your local computer store would be appreciated!). Book rates by surface mail are not expensive! De Jack, WD8BNG

```

1 REM "MOON" by Maki, YU32M, 12/83
5 DIM A$(2)
100 ? "Y":? "Moon Coordinates":? :? "Date (UTC)":? "D,M,Y":INPUT DA,MJ,GO:IF MJ=1 THEN 140
110 IF MJ=2 THEN 130
120 DB=DA+30*(MJ-1)+INT(0.6*(MJ-1)-0.6)-1:GOTO 140
130 DB=DA+31
140 DJ=INT(DB+365*(GO-1983)+5334+(GO-1988)/4):IF MJ>2 THEN 160
150 DJ=DJ-1
160 ? :? "TIME (UTC)":? "H,M,S" "":INPUT SA,MI,SE
170 IF SA=23 THEN SA=-1:DJ=DJ+1
180 SA=SA+1:DJ=DJ+0.5*(SA+MI/60+SE/3600)/24
200 ? :? "My latitude (North of Equator)":? "D,M,S" "":INPUT LA,LAM,LAS:LA=LAM/LAM/60+LAS/3600
210 ? :? "My longitude (East of Greenwich)":? "D,M,S" "":INPUT LOO,LOM,LOS:LO=LOO/LOM/60+LOS/3600
215 ? "Do you wish hard copy of the info":INPUT A$:IF A$(1,1)="Y" THEN PP=1
220 IF PP=1 THEN OPEN #2,0,"P":? :? #2:"DAY TIME (UTC) DECLIN. AZMUTH"
225 ? :? "TIME STEP":? "MINUTES" "":INPUT TS
300 DEG :SL=SIN(LA):CL=COS(LA):OB=23.45
310 A=(DJ+24980.801)/365.25:B=270.434+4812.67883*A:C=296.105+4771.98849*A:D=B-259.183+19.3414201*A
320 E=358.476+359.990477*A:F=B-279.697-360.007689*A:G=1-2.495E-05*A
400 B=B+6.28875*SIN(C)+0.21362*SIN(2*C)+1.27402*SIN(2*XF-C)+0.65831*SIN(2*XF)-0.18564*SIN(E)
410 B=B-0.11434*SIN(2*XD)-0.05879*SIN(2*(C-F))+0.05721*SIN(2*XF-E-C)+0.05332*SIN(2*XF+C)
420 B=B+0.04587*SIN(2*XF-E)+0.04101*SIN(2*(C-E)-0.03476*SIN(F)-0.03046*SIN(E+C))
430 B=B-360*INT(B/360)
500 H=5.12819*SIN(D)+0.28061*SIN(D+C)+0.27769*SIN(C-D)+0.17324*SIN(2*XF-D)+0.05541*SIN(2*XF+D-C)
510 H=H+0.04627*SIN(2*XF-D-C)+0.03257*SIN(2*XF+D)
520 J=ATN(SIN(B)*COS(H)/SIN(H)):K=ATN(SIN(J-OB)/SIN(J)*SIN(B)/COS(B))
600 IF B>90 THEN 640
610 IF J<0 THEN 700
620 IF J-OB<0 THEN 680
630 GOTO 700
640 IF B>270 THEN 660
650 K=K+180:GOTO 700

```



```

660 IF J<0 THEN 680
670 IF J-08<0 THEN 700
680 K=K+360
700 L=ATN(SIN(K)XCDOS(J-08)/SIN(J-08))
710 H=(DJ-5344.5)/365.2422X366.2422+0.38263773+LD/360-1/24+H-(H-INT(H))X360
715 N=H-K:IF N<0 THEN 730
720 N=N+360
730 P=SLX SIN(L)+CLX COS(L)XCDOS(N):IF P<0 THEN V=1:GOTO 800
740 Q=ATN(SQR(1+P*P)/P):R=(-CLX SIN(L)+SLX COS(L)XCDOS(N))/SIN(Q):S=ATN(SQR(1-R*R)/R)+180:IF R>0 THEN 760
750 S=S+180
760 IF N<180 THEN 800
770 S=360-S
800 T=(DJ-0.5-INT(DJ-0.5))X24-1+IE-03:U=(T-INT(T))X60:IF T<0 THEN T=23
810 IF T2T THEN DA=DA+1:IF DA>31 THEN DA=1:MJ=MJ+1:IF MJ>12 THEN MJ=1:SD=SD+1
820 ? DA;" "MJ;" "SD;" ";;IF T<10 THEN ? "0";
825 TIME=INT(T)
830 ? TIME;" ";;IF UK<10 THEN ? "0";
835 UTC=INT(U)
840 ? UTC;" ";;IF V THEN ? "NOT VISIBLE":GOTO 870
850 DE=INT(90-Q+0.5):IF DE<10 THEN ? "0";
855 AZ=INT(S-360XINT(S/360)+0.5)
860 ? DE;" ";;AZ
870 IF PP=1 THEN GOSUB 900
875 T2=T:DJ=DJ+TS/60/24+IE-05XTS/60
876 V=0
880 GOTO 310
900 ? #2:DA;" "MJ;" "SD;" ";;IF T<10 THEN ? #2;"0";
910 ? #2:TIME;" ";;IF UK<10 THEN ? #2;"0";
920 ? #2:UTC;" ";;IF V THEN ? #2;"NOT VISIBLE":GOTO 950
930 IF DE<10 THEN ? #2;"0";
940 ? #2:DE;" ";;? #2:AZ
950 RETURN

```

SAMPLE OUTPUT

DAY	TIME (UTC)	DECLIN. AZMUTH
1.1.1984	00:00	NOT VISIBLE
1.1.1984	01:00	NOT VISIBLE
1.1.1984	02:00	NOT VISIBLE
1.1.1984	03:00	NOT VISIBLE
1.1.1984	04:00	NOT VISIBLE
1.1.1984	05:00	NOT VISIBLE
1.1.1984	06:00	NOT VISIBLE
1.1.1984	07:00	NOT VISIBLE
1.1.1984	08:00	NOT VISIBLE
1.1.1984	09:00	NOT VISIBLE
1.1.1984	10:00	01 118
1.1.1984	11:00	10 129
1.1.1984	12:00	18 140
1.1.1984	13:00	24 153
1.1.1984	14:00	27 167
1.1.1984	15:00	28 183
1.1.1984	16:00	26 197
1.1.1984	17:00	21 211



1202 E. 23rd Street (913) 842-7745
Lawrence, Kansas 66044

December 20. 1983

Jack McKirgan II
4749 S.R. 207 NE
Washington Court House, OH 43160

Dear Mr. McKirgan,

Just a note to let you know how much I enjoy Ad Astra. It is one of the best from the group of similar publications which cross my desk periodically.

I did note with some amusement your comment on page 47 of the September-October issue. While I can respect and accept your editorial comment I do believe the implied accusation to be a bit unfair. We at Kantronics take pride in the manufacture of quality products and provision of superior service to our customers.

As you know our research and development efforts provided the first integrated CW/RTTY/ASCII system for several different computers. Since entering this arena we continue to devote our resources to the development of new products and improvement of those in existence. Toward this end, our research dollars must be invested in those products which appear to offer a potential return to offset development and production costs and pay the bills. That's business! Unfortunately, and much to our surprise, the Atari line has not demonstrated this potential. Since its inception twenty months ago Atari Hamsoft has been in very low demand. It has, in fact, been demanded by fewer users than you report having as subscribers to Ad Astra. In short-sound business practice dictates that we must invest in products which will sell-otherwise we go broke.

It may be noteworthy that several Kantronics products, i.e. Field Day, Mini-Reader and Interface were pioneer units in the Amateur line. In the time since, others have appeared in the marketplace. Had we not pioneered this field perhaps there would have been fewer, and higher priced, options available in the Computer/Ham Interface arena today?

Keep up the good work, I do enjoy your Journal. Just had to give you a look at the other side of the coin. We are not quick-buck artists and do not concentrate on specific computers of either low or high price, only those for which we perceive a demand from the Amateur community.

Sincerely,

Travis Brann
Manager, Sales and Service

TB/wr

THE EDITOR RESPONDS!

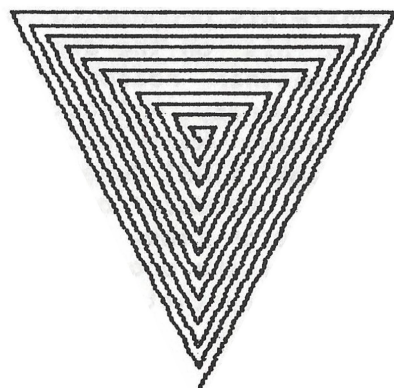
While I thank Mr. Brann for his comments about "Ad Astra...", I think his observations need to be responded to.

Of course, Mr. Brann has a responsibility to his employer and business to tell their side of the story, and he did an admirable job of it! I agree with him that Kantronics was a pioneer of affordable microprocessor-based RTTY/CW peripherals and computer interfaces. Witness my review of the original Kantronics interface and HAMSOF for the ATARI in Vol. 1 #1 and #2 of "Ad Astra...". I was very happy with the product, and still think that it is the best of it's generation. BUT.... the times, they are a'changin! Indeed, the demand for ATARI HAMSOF may have been low, particularly when viewed beside the sales for the same program for the VIC-20, which at the time was being sold at one third of the price of an ATARI 800 and being sold as inexpensive combinations by several amateur shops. Certainly, HAMSOF for whichever system, along with the INTERFACE, was THE catalyst for making RTTY and other modes as popular as they are today. Perhaps there was a misunderstanding on Kantronics' part as to the makeup of ATARI Computer Systems owners? According to the last poll of members from the net, 97% of us have at least one disk drive! We are indeed NOT the cartridge-plugging types with a limited knowledge of hardware and software and I don't believe that we should be treated as such by manufacturers! After all, three of our own members have created commercial programs that have disk/tape upload-download capabilities and one of them, Bob Holsti has been so gracious as to donate his program to our public-domain library along with his on-the-air ASCII Program Exchange package! Another reason for low sales of HAMSOF may have been piracy. Without a doubt, software manufacturers, including Kantronics, mis-judged the ability of the "average" ATARI owner to clone ROM-based software. Had the product been available on a well-protected diskette or tape, there may not have been as much piracy of the product as there certainly is. I would venture to say that only one out of three

people who use HAMSOFT are using the original! (This is good news for us, Travis states that about 700 units of HAMSOFT have been sold, yet our member poll reveals that about 15% of the members use HAMSOFT.... there's a lot more of us out there!).

Certainly there are difficulties in bringing a product to market if one does not believe that the base of machines is large enough to recoup developmental costs as well as reap a decent profit. I personally contend that Kantronics made a grave error in not following up on HAMSOFT with an ATARI HAMTEXT and similar products. I also believe that had HAMTEXT been made available for the ATARI, there would have been a greater share of the ATARI market that would have gone to the Kantronics software and hardware. This market is now forever lost to those who are using the superb Macroronics TERMINALL and RM-1000 system! I feel that Kantronics did their best to stifle their own growth in the ATARI market by NOT producing the type of software that we wanted in the first place!

Travis, neither you or Dr. Anderson should be "amused" at my "implied accusation"! You should be concerned by your position! I am sure that you are indeed proud of your products and accomplishments, but refusing to continue with the support that was promised to we ATARI users almost two years ago should be a source of shame if not irritation over the fact that others found that it was profitable to produce excellent software and hardware in a market that you deemed unworthy. My "implied accusation" stands. DE Jack, WD8BNG



NOTES FROM THE NET

From Paul, WA8ZLJ... "Your review of "The Chip" is too mild It is the best thing to come along the pike for ATARI disk drives in years and reasonably priced too!" Also, "The Macrotronics Terminall T-4 is head and shoulders better than HAL's DS 3000 which I used to run on the ham bands, While the latter is a good sound machine and well built, it is too limited and the folks at Macrotronics filled in all the gaps at a much more reasonable price."

From Charlie, W5GA... Tape-based systems have generally had one major problem when using a tape to hold more than one program... that of proper cuing. On starting with a new tape, I place it in the 410 recorder, rewind it if necessary, and set the digital tape counter at 000. I then advance the tape to 005, remove it and place it in my regular tape recorder (a Sony) and make an announcement or comment in voice (better not use more than 10 seconds of the tape time or the computer may grunt and groan and reject the audio when it is time to read it into the computer.). I stop the ape immediately after the announcement and place it in the 410 recorder. Without moving the tape (rewinding or advancing), I start the CSAVE in order to record the program on tape. After a number of programs have been saved in this manner, then may be easily identified. When loading the program back into the computer, locate it as close as possible with the digital counter, type CLOAD and you will hear the audio comment come through the monitor's speaker. This method may also be used on pre-recorded apes as long as the announcement is short.

From Randy, WB4BZX... Users of the Macrotronics Screen dump program and the MX-80 printer may use the program without the special interface by typing POKE 795,48: POKE 796,228. This will set the OS up in the default conditions and send the printer info through the 850 or similar interface. (EDITOR'S NOTE: This method does not work properly on the NEC/Prowriter printers, 'tho we haven't tried it on others. It appears that after a number of bytes have been read, data is scrambled by the driver-850 interaction.)

From Adrian, KA5BFX... I found that the 410 recorders are good basic units and that their loading problems seem to be centered around alignment of the head. A simple alignment by adjusting the head for maximum output while monitoring with a 'scope during a load from a commercially duped program should do just fine. Also, pulling forward on the small chrome spring at the rear of the cassette wall will assure cassette seating fully against the head.

From Charlie, W5GA... I found that the best belt dressing that I have used on my 410's counter belt was "Permatex" brand belt dressing and that it is readily available around the country. It leaves no residue and should be applied with a cotton swab to the belt while it is moving by placing the recorder in the rewind mode.

From Dannie, KC4G0... Dannie has a part-time BBS on line operating with the AMIS BBS program. Members are invited to check in. Dannie's QTH is Casselberry, Florida and the BBS number is (305) 695-4335

DOUBLE DENSITY DOS 2.0!
By Jim Krutzler, WA2GUM

There are many double density disk drives available for the ATARI now, but what does one do if there is no DOS supplied with it? OK, let's let the power of your ATARI work it's magic once again! Set your double density drive to the DD mode. With my earlier Percom, model RFD-40S1, I set the DIP switches # 3 and # 4 to the ON position.

Use the Assembler/Editor cartridge to make this short program and save it to disk:

```
10  X=$1311; location for drive 1
20  .BYTE 2; pokes 2 into the location
```

ASM,, D:DOUBLE.OBJ

What you are going to do is poke location 4881 (decimal) with a 2 (double density), a 1 is single density. Location 4882 is drive 2, 4883 is drive 3 etc.

Load ATARI DOS 2.0S into memory. Now use OPTION L to load in the DOUBLE.OBJ program. Format a blank diskette. You have just formatted it in double density mode! When the formatting is completed, write this modified DOS to it with OPTION H. Check the sector count of DOS.SYS and DUP.SYS to verify that it has used only half of the single density amount of space. If so, then you now have a double density disk.

You can now use a sector utility such as DISKEY, DISKTOOL (ANALOG # 8), or DISKSCAN to change the header note in the DUP.SYS file to read 2.00 instead of 2.0S!
73, DE Jim, WA2GUM

NET LIBRARIAN SERVICES

In order to access the library you must follow this procedure:

To receive a listing of programs presently available, send \$1.00 U.S. to the librarian and a business sized SASE.

To obtain programs from the library, send blank formatted diskettes to the librarian along with your requests. Send \$1 U.S. for each side of the disk to be duplicated. You may request programs from several disks to be placed on your disk, but the copying fee need only be made for each side of your disk(s) to be used.

The net librarian also maintains the ATARI-NET BBS, and you may receive programs from the library for the price of a phone call. If there is a specific program that you will want, contact the librarian/SYSOP ahead of time so that he may have the program on-line for you at the time of your call.

LIBRARIAN- ATARI MICRO-NET

John Adams, KC5FW
17106 Happy Hollow
San Antonio, Texas 78232

MEMBER SERVICES

DISKETTES W/SLEEVES

We are now able to obtain diskettes with sleeves at a low price. Previously, the sleeves were an additional cost due to the bulk-style packaging of the disks. These disks could be one of several brands as we receive only what is available at the moment from the supplier. These brands have been Wabash, Memorex, Scotch and Verbatim in the past. Cost from Net HQ is \$2.00 per diskette. Orders of 10 diskettes or more will receive 2 bonus diskettes for each 10 ordered! Shipping is included in orders for 5 diskettes or more. If the order is for less than 5 diskettes, please enclose an extra \$1.00 to cover the postage. The profit (\$.40 less postage) goes into making "Ad Astra..." bigger and better!

DISKETTE STORAGE BOXES

We have on hand a small number of plain white boxes of the type that diskettes are usually purchased in. These boxes are available for \$.50 each. Send an 8 X 10" envelope with enough postage for your boxes. Each box weighs approx. 1 oz. We will investigate the possibility of printing the "Ad Astra..." logo on the boxes at a later date!

ATARI MICRONET BBS

The ATARI Microcomputer Network maintains a phone modem bulliten board service. It is open to all members and you must use your membership # as the password. Upload and download capabilities will only be made available to members even though others may access the BBS for general information. The number is (512) 494-7476

IMPORTANT !

It is VERY important that members who have moved or changed their address to contact Net HQ with the new information immediately.

Also, if you feel that the "subscription" information on your mailing label is not correct, please send a

photocopy of your check or a copy of your confirmation letter (the letter that was sent to you when you registered with the net.)

I try very hard to keep all information current and I have 2 separate data bases for all members. Of course, it IS possible that I goofed somewhere along the line! Let me know if you think I did!

When corresponding with net headquarters, be it for praise, complaint, "Ad Astra..." subscription renewal or query, PLEASE include your membership number! You can locate it following your name or callsign on your mailing label. This helps me locate your information in the proper database since our membership data now fills two diskettes!

THANKS!

Jack, WD8BNG

NET HISTORIAN

The Net historian will provide photocopies of articles to members for a 50 cent fee plus 15 cents for each actual page to be copied. Average article size is 3 pages and we ask that you limit requests to no more than 3 articles unless specific arrangements are made with the historian.

HISTORIAN- ATARI MICRO-NET

Major Phillip Weaver, W00JL
919 Bordeaux Avenue
Omaha, Nebraska 68123

ATARI 1020 RPT
BY DAVE, W84JUG

THE ATARI 1020 PRINTER/PLOTTER

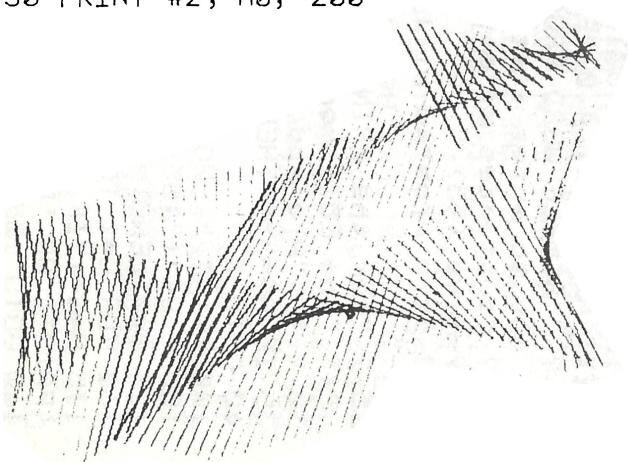
Editor's Note: The enclosed pages were sent to me by Dave Flinker, WB4JUG. Dave now owns the new ATARI 1020 and wanted to share it's capabilities. Please note that this is being reproduced in 1:1 scale so you will be able to see different fonts. Also, this appears to be a superb plotter and you will see various demonstrations of the plotting capabilities throughout this issue of "Ad Astra..." I am sure that due to reproduction problems, one or two of the colors will not show up, but since many of the forms are symmetrical, you should get the idea!

[illegible]

```

5 Z=1:L=1
10 OPEN #2,8,0,"P"
15 PRINT #2;" "
20 DIM A$(20):A$="PAD ASTRA..."
25 X=100:Y=0
30 PRINT #2;" "
35 PRINT #2;"C";L
40 PRINT #2;"H"
50 PRINT #2;"M";X;"",";Y
60 PRINT #2;"Q0":GOSUB 100
70 PRINT #2;"Q1":GOSUB 100
80 PRINT #2;"Q2":GOSUB 100
90 PRINT #2;"Q3":GOSUB 100
95 PRINT #2;"H":ON Z GOTO 200,300,400
100 PRINT #2;A$
110 RETURN
200 Z=Z+1:PRINT #2;" "
210 X=170:Y=-20:L=2
290 GOTO 30
300 Z=Z+1:PRINT #2;" "
310 X=205:Y=-30:L=3
390 GOTO 30
400 PRINT #2;" "
405 PRINT #2;" "
410 PRINT #2;"M40,-200"
420 PRINT #2;"Q0"
430 PRINT #2;"C0"
440 PRINT #2;"P1020 PRINT STYLES"
450 PRINT #2;"M0,-200"

```



SIMPLE WORD PROCESSOR **BY BILL FEIST**

```

0 REM SIMPLE WORD PROCESSING PROGRAM WRITTEN BY BILL FEIST (11/06/83)
1 DIM A$(1),SENT$(80),ARRAY(55,80),LENGTH(55):FOR A=1700 TO 1713:READ B:POKE A,B
:NEXT A:OPEN #1,4,0,"E:"
10 ? " SIMPLE WORD PROCESSOR":? :? "This is a simple word processor. It":? "allows
you to enter fifty-five (55)"
15 ? "sentences of eighty (80) characters":? "each.":? :? "After entering line f
ifty-five (55),"
20 ? "the program will automatically enter":? "the PRINT mode. Enter 'PRINT' to
en-"
25 ? "ter the PRINT mode before line fifty-":? "five (55); enter 'EDIT' to enter
":? "the EDIT mode."
30 ? :? "Are you ready to begin (Y?N): ":INPUT A$
35 IF A$="Y" THEN GOTO 205
40 GOTO 5
100 S=1: ? " WORD PROCESSOR FUNCTION":?
105 ? S:(";"55-S;"):P=1:GOTO 400
125 P=0:LENGTH(S)=LEN(SENT$):IF LENGTH(S)=0 THEN 135
130 FOR L=1 TO LEN(SENT$):ARRAY(S,L)=ASC(SENT$(L)):NEXT L
135 S=S+1:IF S=56 THEN ? :? "MAXIMUM LETTER SIZE REACHED. PLEASE":? "CHOOSE TO
'PRINT' OR 'EDIT'":GOTO 400
140 GOTO 105
200 REM PRINT FUNCTION

```

```

205 ? " Enter 'PRINT', 'EDIT', or 'WRITE' ":"GOTO 400
210 ? " PRINT FUNCTION":OPEN #4,8,0,"P":FOR SS=1 TO 9-1:IF LENGTH(SS)=0 THEN G
OTO 220
215 FOR L=1 TO LENGTH(SS):? CHR$(ARRAY(SS,L)):PRINT #4:CHR$(ARRAY(SS,L)):NEXT
L
220 PRINT :PRINT #4:NEXT SS:CLOSE #4:GOTO 205
300 ? " EDIT FUNCTION":? :? "The following commands are available":? "for the
EDIT function:"
302 ? :? " 1. E(rase) text from this line on":? " 2. F(inish) and return to
Menu"
304 ? " 3. M(ove) text up or down":? " 4. P(rint) entire text"
306 ? " 5. R(ewrite) line":? " 6. T(ypewriter) Function":? " 7. W(ord) Pro
cessor Function"
308 ? " 8. (+) Advances text one line":? " 9. (-) Reverses text one line"
310 SS=1:?:? "Your Choice: ":"GOTO 355
315 INPUT A$
320 IF A$="E" THEN GOTO 340
322 IF A$="F" THEN GOTO 205
324 IF A$="M" THEN GOTO 380
326 IF A$="P" THEN GOTO 210
328 IF A$="R" THEN GOTO 365
330 IF A$="T" THEN GOTO 450
332 IF A$="W" THEN GOTO 100
334 IF A$="+" THEN GOTO 390
336 IF A$="-" THEN GOTO 392

```

```

338 POSITION 18,15:?"INCORRECT RESPONSE":FOR T=1 TO 300:NEXT T:POSITION 18,15:?"
"
340 S=SS+1:POSITION 18,15:?"ERASING":FOR SSS=SS TO 55:LENGTH(SSS)=0:NEXT SSS
342 POSITION 18,15:?" "
350 POSITION 16,15:?" "
355 POSITION 2,17:?"SS: "(";SS-SS;") "
360 FOR L=1 TO LENGTH(SSS):?"CHR$(ARRAY(SS,L))":NEXT L:GOTO 350
365 POSITION 2,20:?"SS: "(";SS-SS;") "
367 IF SSS THEN S=SS+1
370 LENGTH(SS)=LEN(SENT$):IF LENGTH(SS)=0 THEN 390
375 FOR L=1 TO LEN(SENT$):ARRAY(SS,L)=ASC(SENT$(L)):NEXT L:GOTO 390
380 POSITION 2,20:?"How many lines do you wish to move":INPUT M
382 IF M<0 THEN GOTO 388
384 FOR SSS=S-1 TO SS STEP -1:FOR L=1 TO LENGTH(SSS):ARRAY(SSS+M,L)=ARRAY(SSS,L):
:ARRAY(SSS,L)=32:NEXT L
386 LENGTH(SSS+M)=LENGTH(SSS):LENGTH(SSS)=0:NEXT SSS:S=S+M:GOTO 395
388 FOR SSS=SS TO S-1:FOR L=1 TO LENGTH(SSS):ARRAY(SSS+M,L)=ARRAY(SSS,L):ARRAY(S
SS,L)=32:NEXT L:GOTO 386
390 SS=SS+1:GOTO 395
392 SS=SS-1:GOTO 395
395 X=USR(1700)
397 GOTO 355
400 ? " ":INPUT #1,SENT$
405 IF SENT$="PRINT" THEN 210
410 IF SENT$="EDIT" THEN 300
415 IF SENT$="WRITE" THEN 100
420 IF P=1 THEN GOTO 125
425 GOTO 400
450 ? "TYPEWRITER FUNCTION NOT OPERATIONAL":FOR T=1 TO 300:NEXT T:GOTO 205
500 DATA 104,169,0,162,0,157,194,158,232,224,255,208,248,96

```


TWO TIPS FROM ATARI

ATARI has come through again for those members who want to enhance or improve two of their units. This information is directly from ATARI's technical update sheets. Refer to the silkscreening on the PC boards when identifying components. Remember, if you attempt these or any other mods yourself, you will be violating any warranty that you may have. So, don't do this if you aren't sure you can handle them!

INCREASING WRITE-CURRENT IN THE ATARI 810 DISK DRIVE

We presented one method for increasing the write-current in the 810 in an earlier issue of "Ad Astra...". The approach was simplistic, yet effective. This method is more complex, but should provide even more reliability for anyone who has experienced this rare difficulty.

1. Cut the ground trace under resistor R161 (COMPONENT SIDE)
2. Cut the trace going to pin 2 of A107 (COMPONENT SIDE)
3. Replace resistor R167 with a 1.3K 1/4 watt 5% resistor (COMPONENT SIDE)
4. Cut the trace going to pin 2 of A107 (SOLDER SIDE)
5. Install jumper (B) between pin 13 of J106 to R153 (+5 volt side) (SOLDER SIDE)
6. Install R176 (100K 1/4 watt 5%) between pin 16 of J106 and pin 12 of A110 (SOLDER SIDE)
7. Install jumper (A) between pin 14 of A110 and R161 (SOLDER SIDE)
8. Install CR120 (1N914 Diode) between pin 2 of A107 and C161. Cathode end to A107 (SOLDER SIDE)
9. Install R175 (100K 1/4 watt 5%). One side goes to feedthru leading to pin 13 of A111 and the other side is tied to the Cathode side of CR120 (SOLDER SIDE)

INCREASING COMPOSITE LUMINANCE LEVEL ON THE ATARI 1200XL COMPUTER

The ATARI 1200XL computer was hastily put into production without benefit of a full schedule of fine tuning by the R&D department. The major problem in the final version is in the direct video monitor output. Certainly the levels of chroma in the composite video signal were boosted by simple component changes that gave a more saturated signal to TV monitors, but there was a drop in luminance levels to the monitor port. At present we have no mod for obtaining a separate chroma output for the port, but I'm sure an inquisitive member will develop one!

To put the snap back in your composite monitor, make the following changes:

1. Change R22 (4.3K ohm) to 6.2K ohm
2. Empty position R145 should have an 18K resistor inserted
3. Change R163 (100 ohm) to 150 ohm
4. Remove R188 (190 ohm) to a 1N914 diode (Banded end [CATHODE] should be at the end closest to the bridge rectifier.). Any similar diode should work as well.

Total cost of this mod will be less than \$1 and should take less than 20 minutes to accomplish if you are familiar with the layout on the 1200XL's PC board.

I would like to encourage members to follow-up on this mod and try to work out a mod for extracting the chroma signal from the 1200XL. DE Jack, WD8BNG

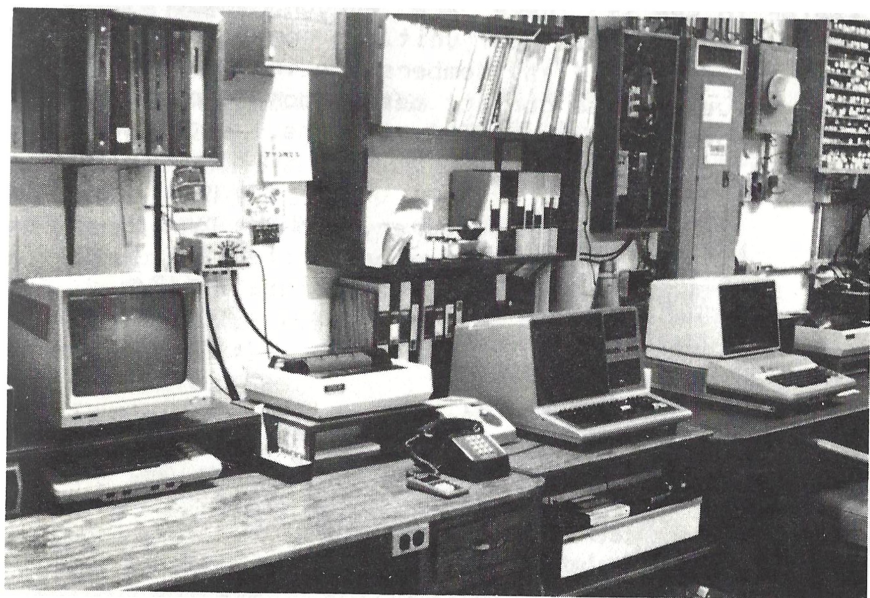
RE-BOOTING WITHOUT WEAR by Jim Krutzler, WA2GUM

Here is an idea that many should find handy. Certainly the ATARI's on-off switch is more convenient than those of many computers, but it can take a extraordinary amount of wear during it's life. Failure of the switch is rare and many use the ROM compartment's interlock often which also saves the switch. If you want an even better method, try this:

Go to your local Radio Shack (or parts jobber) and obtain a pair of miniature canon plugs and jack that match those on your computer and power supply cable. RS 274-1566 RS 274-1568

Also, obtain a miniature normally-closed momentary contact switch. Wire the plugs to the switch in order to obtain a feedthru of current to the computer. Now, plug the switch's plug into the jack on your computer and the power supply's jack into the plug on the switch.

Now, to re-boot your machine, put the new disk in the drive and simply push the switch for a moment and release. I mounted my switch in my operating desk flush with the surface so that it is not accidentally pressed, yet is accessible. DE Jim, WA2GUM



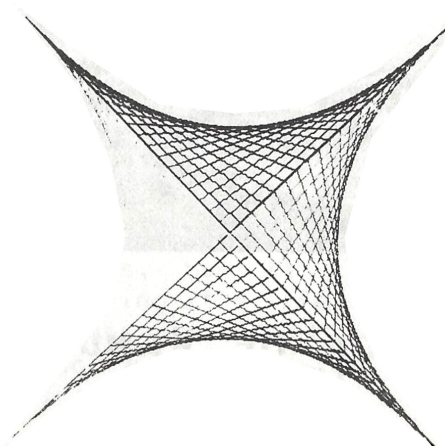
THE SHACK OF RANDY AGEE,
WB4BZX

DISK DRIVE INFO

Need a disk drive for your '400 or '800? How about two of them in a single cabinet with a built-in power supply? Throw in single or double density with OSS Q/S A+ as part of the deal. Sound kind of nice? You bet it is. These are MPI drives with a new type of cover latch and they run VERY quietly. In double-density configuration they will put 180K bytes on each side of a disk. Unlike some other drives, the ASTRA 1620 uses a DOS that is totally compatable with ATARI DOS. I have been using mine for six weeks as of the time of this writing and it has performed perfectly! I believe that it is one of the better buys in peripherals for the ATARI Computer System and I would be glad to help members to obtain this unit.

I have spoke to the folks at ASTRA Systems about the possibility of a group purchase for members and they have given me a tentative price of \$449.95 plus shipping in quantities of 12 or more. This is merely a feeler to see if there are enough members who are interested in this dual unit. No commitments have been made as of yet. If any members are interested in this disk drive, please contact me as soon as possible. I am not connected with ASTRA systems, so there is no conflict of interest.

John Scheurer, WB6WIW
17202 Englewood Circle
Huntington Beach, California 92647



NEW MEMBERS!

We would like to welcome the following new members to the ATARI Microcomputer Network! By the time that this issue of "Ad Astra..." reaches you, we will have well over 800 members in the net! It would be a great thing to have everyone gathered together at one time for a huge meeting! Unfortunately, this can never be due to the large distances involved. However, we will have the first of our annual meetings coinciding with the Dayton Hamvention this April! At the time of this writing plans have not been completed, but we are attempting to obtain a meeting room close to the convention center. The next issue of "Ad Astra..." will have complete details of the event. If you have a favorite program or interfacing project that you would like to show to the rest of the members, PLEASE contact me so that we can help you share your work.

DE Jack, WD8BNG

Don Redd WD4ERA #743

Glenn Gwaltney KA4EDI #744

Rick Ferranti WA6NCX/1 #745

MSG Lee R. Chasse KA3FJM/ON8DU #746

Clarence Carlson W0GCR #747

Jerry Rector WA4KZX #748

Tom Adair #749

James Caldwell K4JPM #751

George Cassidy N8ETO #752

Travis Roach WA4DOR #753

Ben Franklin KA4MIU #754

Jerry Peel KA4BDW #755

Dannie Martin KC4GO #756

Ralph Tafel WA8RLV #757

Gary Lins KB4J #758

Patricia Carney #759

Michael Puckett #760

Larry Carbaugh #761

Joseph Salus Jr. #762

Martin Evans #763

Joan Flower WA2ICE #764

Gonder Tom #765

Paul Przybylski #766

Marc Mugmon N3DBS #769

Dave Ridenour N8BUE #770

Stephen Misovic KA2NDG #771

Larry Gullett WD8CFH #772

Peter Wu #773

Corby Eichmann #774

David Koch W8LNU #717

Mark Weisheimer WB8GBY #718

Roger Grady K9OPO #719

Thomas Kauffman N8DSM #720

John D'Ausilio KA1TB #721

John Wright WA7TUN #722

CH (Maj.) Paul Phelps WA7ZLJ/DA2PP #723

Kent Lockhart #724

Gary Castellini KA2PNX #725

Craig Lippman WA1SRI #726

Steve Johnson WA0UXB #727

Howard Lebowitz #728

Mike Deecke KB6QM #729

Norman Gottschalk WD8REN #730

Rudy Taraschi VE2GTU #731

Carla & Frank Pollard #732

Richard Fleagle #733

Jim Danley KS6H #734

Derek Slater G4MQJ #735

Daimon Tilley G4USI #736

Bruce Stewart #737

Gary Haddan W4MHC #738

Tom Chamberlin XE1JZ #739

Carl Ruh W4T2T #740

Bill Grayburn W3USH #741

W.J. Taylor 9M2TW #742

NEW AND IMPROVED CW RECEIVE PROGRAM by Guy Clark, WB0NNK

The following program is a revision of the original CW receive program provided by Doug Kleeman, KA9LWN, as presented in Vol. 2, # 3 of "Ad Astra...". I have added a couple of additional functions to the program for CW training and also converted the program from ATARI Microsoft BASIC into ATARI BASIC.

I would like to thank Doug for his inspiration in producing this program and I would like to invite other members to build upon this version. DE Guy, WB0NNK

EDITOR'S NOTE: I would like to thank both Doug and Guy for their efforts. Unfortunately, when I did the paste-up of the original article, I did not mention that the original had been written in Microsoft. Also there was some confusion as to illustration numbers. I have received an updated version of the CW Receive interface by Doug and the information on this is presented below:

Figure 1 shows a demodulator in which diodes rectify the audio from the speaker. When a CW tone is present, the audio voltage goes up and "keys" (turns on) the transistor. The output of the transistor is sent to the computer.

In Figure 2, audio is sent directly into the IC (no limiting or rectifying needed). The IC sends the audio through a rectifier and rates it's voltage on a scale of 1 to 10, according to it's strength. Thus, if a 10-LED readout were hooked up to the outputs of the IC, simple noise would only light up one or two of the LEDs (Figure 3) while a good CW tone would light many of the LEDs on the scale. (Figure 4)

Make sure that you only set the volume high enough for the circuit to detect a good clean CW signal. You don't want to fry a \$4.00 IC, do you? Figure 5 is the layout of the joyport for connections to pin 5 ("B" potentiometer input) and pin 7 (+5VDC). To monitor what is actually happening in this circuit, you might try this program (Be sure to use port # 1, pins 5 and 7 as prescribed).

```
10 IF PADDLE(1) < 50 THEN SOUND 0,115,10,8: GOTO 10
20 SOUND 0,0,0,0: GOTO 10
```

Now, whenever any signal is present, it should be echoed through your TV's speaker! I use this interface to send HI and LO RES pictures over the phone and on the air! Using a simple program to read the screen RAM and send a DIT to denote a pixel ON and a DAH to signify that a pixel is off, should give you enough of a hint as to how it's done! Think about that one and send in a program to "Ad Astra..." with your version! DE Doug, KA9LWN

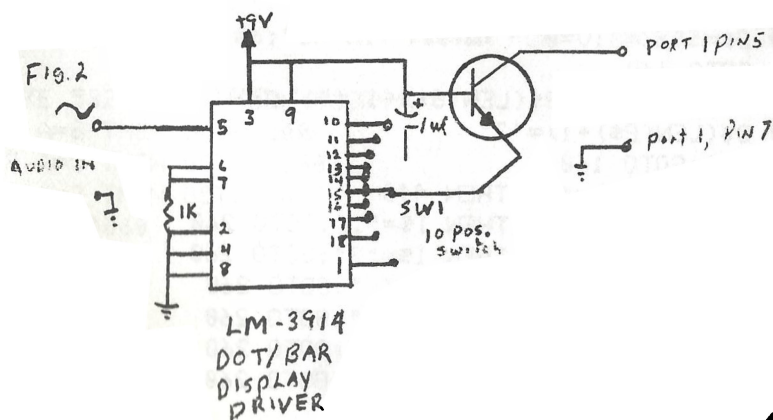
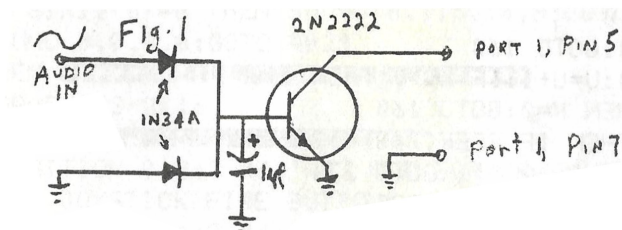


Fig 3

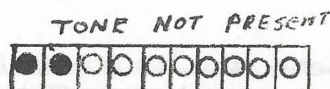


Fig 4

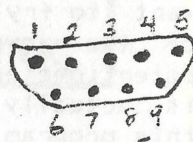
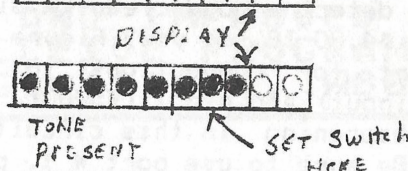


FIG. 5

```

5 REM :*****
10 REM DE MD MSTRM, VOL 2HR
20 REM MODIFIED AND TYPED BY GUY K. DIM
RX ARONIX
25 REM :*****
30 GOTO 10000
100 REM ***** COPY ROUTINE *****
110 GRAPHICS 0:POKE 82,1:POKE 83,38:DIM A$(3334),B$(20),I$(20)
120 FOR T=1 TO 26:READ I$,B$:A$(VAL(B$),VAL(B$))=I$:NEXT T
130 CH=PEEK(94)+256*PEEK(95)-2:? " RECEIVING":?
140 B$=""
150 TRAP 150:B$="":I$="":K=0:V=0:U=0
160 A=PADDLE(1)
170 IF A>50 THEN 200:REM *** COMPLETE A TO ANY VALUE FROM 0 TO 228 TO GET GOOD COPY. ***
180 POKE CH,10
190 K=K+1:U=0:GOTO 160
200 POKE CH,0:U=U+1:IF K<>0 THEN 290
210 IF U<6 THEN K=0:GOTO 160
220 IF U>12 THEN IF PEEK(763)<>32 THEN ? " ";
230 IF B$="" THEN ? "":GOTO 270
240 IF VAL(B$)>3333 THEN 320
250 I$=A$(VAL(B$),VAL(B$))
260 ? I$;
270 B$="":K=0:V=0
280 GOTO 160
290 IF K<6 THEN B$(LEN(B$)+1)="1":GOTO 310
300 B$(LEN(B$)+1)="3"
310 K=0:GOTO 160
320 IF B$(1,1)="3" THEN 410
330 IF B$="131313" THEN I$="." :GOTO 260
340 IF B$="113311" THEN I$="?" :GOTO 260
350 IF B$="13313" THEN I$="/" :GOTO 260
360 IF B$="13333" THEN I$="1" :GOTO 260
370 IF B$="11333" THEN I$="2" :GOTO 260
380 IF B$="11133" THEN I$="3" :GOTO 260

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390 IF B$="11113" THEN I$="4":GOTO 260
400 IF B$="11111" THEN I$="5":GOTO 260
410 IF B$="31111" THEN I$="6":GOTO 260
420 IF B$="331133" THEN I$=",":GOTO 260
430 IF B$="33111" THEN I$="7":GOTO 260
440 IF B$="33311" THEN I$="8":GOTO 260
450 IF B$="33331" THEN I$="9":GOTO 260
460 IF B$="33333" THEN I$="0":GOTO 260
470 IF B$="31113" THEN ? " BT ";
480 IF B$="3311111133" THEN ? " 73 ";
490 IF B$="111313" THEN ? " SK ";
500 IF B$="13131" THEN ? " AR ";
510 I$=" ":GOTO 260
1000 DATA A,13,B,3111,C,3131,D,311,E,1,F,1131,G,331,H,1
111,I,11,J,1333,K,313,L,1311
1001 DATA M,33,N,31,O,333,P,1331,Q,3313,R,131,S,111,T,3
,U,113,V,1113,W,133,X,3113,Y,3133,Z,3311
2000 REM ***** PADDLE VERSION *****
2010 GRAPHICS 0:POKE 752,1:? :? :? "▶▶PORT MONITOR":? :
? :? "▶ TURN UP TV SOUND"
2020 IF PADDLE(1)>50 THEN SOUND 0,115,10,8:GOTO 2020
2030 SOUND 0,0,0,0:GOTO 2020
4000 REM ***** JOYSTICK VERSION *****
4010 GRAPHICS 0:POKE 752,1:? :? :? "▶▶CW PRACTICE":? :?
:~? "▶ TURN UP TV SOUND"
4020 IF STRIG(0)=0 THEN SOUND 0,115,10,8:GOTO 4020
4030 SOUND 0,0,0,0:GOTO 4020
10000 REM ***** TITLE PAGE SET-UP *****
10010 GRAPHICS 2+16
10020 ? #6;" CW COPTER & TRAINER"
10030 POSITION 0,2:? #6;"HIT [F5] FOR PRACTICESENDING CW
USING A JOYSTICK FIRE BUTTON"
10040 POSITION 0,6:? #6;"HIT [F5] FOR TUNING IN A SIGNA
L"
10050 POSITION 0,9:? #6;"OR HIT [F5] FOR SCREEN COP
Y."
10060 POKE 53279,8:A=PEEK(53279)
10070 IF A=6 THEN GOTO 100
10080 IF A=5 THEN GOTO 2000
10090 IF A=3 THEN GOTO 4000
10100 GOTO 10060

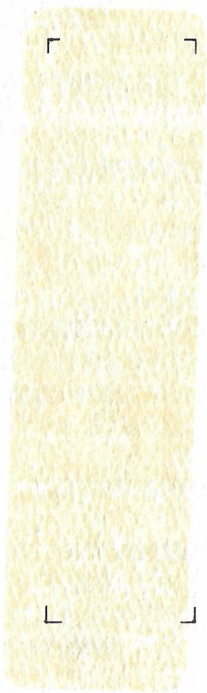
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THE ATARI MICROCOMPUTER NETWORK

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